UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,156	01/29/2004	Scott P. Taylor	7784-000694	6033

65961   7590   08/24/2010
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EXAMINER
PATTON, SPENCER D

ART UNIT	PAPER NUMBER
3664	

MAIL DATE	DELIVERY MODE
08/24/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/768,156	TAYLOR, SCOTT P.
		Examiner	Art Unit	
		SPENCER PATTON	3664	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07 June 2010</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1,3-8,12-16,18,20-22 and 25</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,3-8,12-16,18,20-22 and 25</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>29 January 2004</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail. Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   The amendments filed 6/7/2010 have been entered. Claims 1, 3-8, 12-16, 18,

20-22 and 25 are pending.

Claim Objections

2.   Claims 18 and 25 are objected to because of the following informalities:

Claim 18, last line, "area" should be changed to --areas-- to correspond with

"areas" on the third to last line.

Claim 25 depends on cancelled claim 17. The dependency should be changed

to independent claim 18.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   **Claims 1, 12, 18 and 25** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Sklar et al (US Patent No. 5,990,928) in view of Chobotov (Orbital

Mechanics) and Miller et al (US Patent No. 5,956,644).

Sklar et al teaches:

Re claim 1. A method for determining when a moving, airborne mobile platform will enter or exit at least one satellite coverage region, said method comprising:

determining a plurality of boundary coordinates that define a satellite coverage region perimeter (column 11, lines 2-4), the boundary coordinates taking into consideration latitude and longitude to define a three dimensional spatial volume defined by the satellite coverage region (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is within the coverage area based on the latitude and longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

monitoring a position of the mobile platform and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3); and

determining the proximity of the mobile platform to the satellite coverage region perimeter, taking into account a current latitude and longitude of the mobile platform (blocks 64 and 66, Figure 3; column 13, lines 10-15).

Re claim 12. A system for determining when a moving, airborne mobile platform will enter or exit at least one satellite coverage region, said system comprising:

a database adapted to store boundary coordinates that define a satellite coverage region perimeter (region controller, column 4, lines 9-18), the boundary coordinates taking into consideration latitude and longitude to define a three

dimensional spatial volume defined by the satellite coverage region perimeter (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is within the coverage area based on the latitude and longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

a navigational system on board the mobile platform adapted to monitor a position and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3); and

an on board server system (the inherent hardware and software) adapted to:

communicate with the database and the navigational system (column 4, lines 9-18); and

to determine the proximity of the mobile platform to the satellite coverage region perimeter (blocks 64 and 66, Figure 3; column 13, lines 10-15).

Re claim 18. A method for determining an approximate time of arrival of an airborne mobile platform at one or more satellite coverage area boundaries, said method comprising:

determining a plurality of boundary coordinates that define a satellite coverage region perimeter, the boundary coordinates taking into consideration latitude and longitude to define a three dimensional spatial volume defined by the satellite coverage region (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is

within the coverage area based on the latitude and longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

storing the boundary coordinates in a database accessible by a server system on board the mobile platform (coverage areas are stored in region controller, column 4, lines 9-18);

monitoring a position and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3);

determining the proximity of the mobile platform to the satellite coverage region perimeter (blocks 64 and 66, Figure 3; column 13, lines 10-15); and

determining a time-to-boundary measurement of the mobile platform to indicate an approximate time until the mobile platform will arrive at the satellite coverage area boundary (column 13, lines 10-15).

Sklar et al fails to specifically teach: **(re claims 1, 12 and 18)** the boundary coordinates taking *altitude* into consideration to define a three dimensional spatial volume defined by the satellite coverage region; and **(re claim 1)** taking *altitude* of the mobile platform into account to determine the proximity of the mobile platform to the satellite coverage region perimeter.

Chobotov teaches, at Figure 15.2 and equation 15.3, calculating the radius of the coverage circle at sea level for a satellite to determine the boundaries of a satellite's coverage region at sea level. One of ordinary skill in the art would recognize that the

coverage circle can be calculated at any altitude by modifying Earth's radius (r_e) in equation 15.3 to reflect the altitude above the center of the Earth.

In view of Chobotov's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the method as taught by Sklar et al, **(re claims 1, 12 and 18)** the boundary coordinates taking *altitude* into consideration to define a three dimensional spatial volume defined by the satellite coverage region; and **(re claim 1)** taking *altitude* of the mobile platform into account to determine the proximity of the mobile platform to the satellite coverage region perimeter; since Chobotov teaches the distance of a point of interest from the center of the Earth is used to calculate the coverage area of a satellite serving that point of interest.

The teachings of Sklar et al as modified by Chobotov have been discussed above. Sklar et al as modified by Chobotov fails to specifically teach: **(re claim 1)** identifying fade areas within the satellite coverage region utilizing signal strength data of a signal from a satellite associated with the satellite coverage region; and determining the proximity of the mobile platform to the fade areas; **(re claim 12)** map a plurality of signal strength data throughout the satellite coverage region; identify a fade area within the satellite coverage region where the signal strength is significantly weaker than an average signal strength throughout the satellite coverage region; and determine the proximity of the mobile platform to the fade area; **(re claim 18)** mapping a plurality of signal strength data for the satellite coverage region; identifying signal fade areas within the satellite coverage region utilizing the signal strength data; and determining the

proximity of the mobile platform to the fade area; and **(re claim 25)** wherein the method

further comprises: identifying an edge effect area within the satellite coverage region

utilizing the signal strength data; and determining the proximity of the mobile platform to

the edge effect area.

Miller et al teaches, at column 12, line 61 through column 13, line 2, that

knowledge of the roll off patterns of satellite beams can be used to determine when an

airborne system will hand-off between two satellites (column 3, lines 23-44).

In view of Miller et al's teachings, it would have been obvious to one of ordinary

skill in the art at the time of the invention to include, with the system and method as

taught by Sklar et al as modified by Chobotov, **(re claim 1)** identifying fade areas within

the satellite coverage region utilizing signal strength data of a signal from a satellite

associated with the satellite coverage region; and determining the proximity of the

mobile platform to the fade areas; **(re claim 12)** map a plurality of signal strength data

throughout the satellite coverage region; identify a fade area within the satellite

coverage region where the signal strength is significantly weaker than an average signal

strength throughout the satellite coverage region; and determine the proximity of the

mobile platform to the fade area; **(re claim 18)** mapping a plurality of signal strength

data for the satellite coverage region; identifying signal fade areas within the satellite

coverage region utilizing the signal strength data; and determining the proximity of the

mobile platform to the fade area; and **(re claim 25)** wherein the method further

comprises: identifying an edge effect area within the satellite coverage region utilizing

the signal strength data; and determining the proximity of the mobile platform to the

edge effect area; since Miller et al teaches that knowledge of the roll off patterns at the edge of satellite beams is useful for determining the time allowed for hand-offs between satellites and Sklar et al teaches determining the proximity to the edge of a satellite coverage region as discussed above.

5.   **Claims 1, 12 and 18** are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar et al (US Patent No. 5,990,928) in view of Chobotov (Orbital Mechanics), Satapathy (US Patent No. 7,072,641) and Cotanis (US Publication No. 2002/0042268).

The teachings of Sklar et al as modified by Chobotov have been discussed above. Sklar et al as modified by Chobotov fails to specifically teach: **(re claim 1)** identifying fade areas within the satellite coverage region utilizing signal strength data of a signal from a satellite associated with the satellite coverage region; and determining the proximity of the mobile platform to the fade areas; **(re claim 12)** map a plurality of signal strength data throughout the satellite coverage region; identify a fade area within the satellite coverage region where the signal strength is significantly weaker than an average signal strength throughout the satellite coverage region; and determine the proximity of the mobile platform to the fade area; **(re claim 18)** mapping a plurality of signal strength data for the satellite coverage region; identifying signal fade areas within the satellite coverage region utilizing the signal strength data; and determining the proximity of the mobile platform to the fade area.

Satapathy teaches, at Figure 6, column 1, lines 55-58, column 8, lines 11-55 and

column 9, line 39 through column 10, line 15, determining call drop areas based on

dropped connections resulting from low signal strength and alerting a mobile station

when it is about to enter a "call-drop area" based on the mobile station's distance from

the call-drop area. Additionally Satapathy teaches at column 1, lines 35-44, that a "call"

is not limited to a traditional voice call, but may encompass more advanced data

sessions.

Cotanis teaches, at the abstract and paragraph [0039], that methods for

processing signal strength information and determining signal coverage for wireless

devices apply to cellular site transmitters just as well as satellite transmitters.

In view of Satapathy's teachings, it would have been obvious to one of ordinary

skill in the art at the time of the invention to include, with the system and method as

taught by Sklar et al as modified by Chobotov, **(re claim 1)** identifying fade areas within

the satellite coverage region utilizing signal strength data of a signal from a satellite

associated with the satellite coverage region; and determining the proximity of the

mobile platform to the fade areas; **(re claim 12)** map a plurality of signal strength data

throughout the satellite coverage region; identify a fade area within the satellite

coverage region where the signal strength is significantly weaker than an average signal

strength throughout the satellite coverage region; and determine the proximity of the

mobile platform to the fade area; **(re claim 18)** mapping a plurality of signal strength

data for the satellite coverage region; identifying signal fade areas within the satellite

coverage region utilizing the signal strength data; and determining the proximity of the

mobile platform to the fade area; since Satapathy teaches determining call drop areas

so that a mobile station may be alerted when it is about to lose a signal and Cotanis

teaches that methods for processing signal strength information and determining signal

coverage for wireless devices apply to cellular site transmitters just as well as satellite

transmitters.

6.   **Claims 3, 5-8, 15, 16, 21 and 22** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Sklar et al (US Patent No. 5,990,928) in view of Chobotov (Orbital

Mechanics), and Miller et al (US Patent No. 5,956,644) or Satapathy (US Patent No.

7,072,641) and Cotanis (US Publication No. 2002/0042268).

        Sklar et al teaches:

Re claim 3. Wherein the method further comprises storing the boundary coordinates in

a database accessible by a server system on board the mobile platform (coverage

areas are stored in region controller, column 4, lines 9-18).

Re claims 5 and 21. Wherein said monitoring a position of the mobile platform

comprises periodically determining a latitude, a longitude and an altitude of the mobile

platform as the mobile platform moves along the travel path (latitude, longitude and

altitude, Figure 2; and block 64, Figure 3).

Re claims 6, 14 and 22. Wherein said determining the proximity of the mobile platform

to the satellite coverage region perimeter comprises periodically comparing the position

of the mobile platform to the boundary coordinates (block 66, Figure 3).

Re claims 7 and 15. Wherein the method further comprises determining a time-to-

perimeter measurement of the mobile platform to indicate an approximate time that the

mobile platform will remain within the satellite coverage region (column 13, lines 10-15).

Re claims 8 and 16. Wherein the method further comprises determining a time-to-

perimeter measurement of the mobile platform to indicate an approximate time before

the mobile platform will enter the satellite coverage region (column 13, lines 10-13)

7.   **Claims 4, 13 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Sklar et al (US Patent No. 5,990,928) as modified by Chobotov (Orbital Mechanics)

and Miller et al or Satapathy and Cotanis as applied to claims 1, 12 and 18 above, and

further in view of Ashton et al (US Patent No. 6,434,682).

The teachings of Sklar et al as modified by Chobotov have been discussed

above. Sklar et al as modified by Chobotov fails to specifically teach: **(re claims 4 and**

20) wherein said storing the boundary coordinates comprises at least one of: storing the

coordinates in a look up table; and storing the coordinates in a link list; **(re claim 13)**

wherein the database includes at least one of a look up table and a link list.

Ashton et al teaches, at column 5, lines 14-17, that look up tables and linked lists are suitable and well known data structures for storing data.

In view of Ashton et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the method and system as taught by Sklar et al as modified by Chobotov, **(re claims 4 and 20)** wherein said storing the boundary coordinates comprises at least one of: storing the coordinates in a look up table; and storing the coordinates in a link list; **(re claim 13)** wherein the database includes at least one of a look up table and a link list; since Ashton et al teaches that these data structures are suitable and well known for storing data.

Response to Arguments

8.   Applicant's arguments filed 6/7/2010 have been fully considered but they are not persuasive.

9.   Applicant argues, on pages 9-10, that Miller does not determine the "fade areas" within the satellite coverage region. However determining the roll off pattern of a satellite beam satisfies this claim limitation. Within the roll off region the signal strength is diminished or "faded" and this roll off region is still within the satellite coverage region. An additional rejection further in view of Satapathy (US Patent No. 7,072,641) and Cotanis (US Publication No. 2002/0042268) was made to illustrate the prior art's teachings of fade areas away from the perimeter of the coverage region.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SPENCER PATTON whose telephone number is (571)270-5771. The examiner can normally be reached on Monday-Thursday 7:30-5:00; Alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571)272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SPENCER PATTON/
Examiner, Art Unit 3664
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664